

QUARTERLY SUMMARY
OF THE
IMPROVEMENTS AND DISCOVERIES
IN THE
MEDICAL SCIENCES.

ANATOMY AND PHYSIOLOGY.

1. *On the Pelvico-Prostatic Ligament, or the Apparatus by which the Bladder, Prostate, and Urethra are attached to the outlet of the Pelvis.*—A memoir on this subject, by RETZIUS, which was originally published in Stockholm, and translated by Fr. Creplin, into Müller's "Archiv.," gives a very lucid account of a region most interesting to the anatomist and surgeon, and we present our readers with the following abstract of its most important details.

The author—after alluding to the once-received doctrine that there existed a constrictor of the bladder, and to the observations of Santesson which disproved this doctrine—directs attention to the muscular apparatus surrounding the urethra, described by J. Müller and Santesson: a structure consisting of oblique muscular fibres, analogous to those of the oesophagus and intestines. The muscles described by Wilson are, Retzius thinks, less constant, and are not always to be found on dissection. In the work in which Müller described the "constrictor isthmi urethralis" (Berlin, 1836), he also made mention of the two important *ischio-prostatic ligaments*. These structures are of considerable strength, and extend from the ascending rami of the ischium to the posterior lateral parts of the prostate. Santesson regards these parts somewhat differently from Müller. He views their attachments to the ascending rami of the ischium, and to the descending rami of the pelvis, as a tendinous arch, to which the constrictor urethrae is fixed. Anatomists are much indebted to Müller for having called attention to these important structures; for he, too, considered them as something more than mere ligaments. They are the cord-like and concave hinder edges of a peculiar fibrous capsule, which embraces not only the prostate, but likewise the membranous portion of the urethra—a capsule which performs the part of an important ligament, and which, in its cord-like edges, includes the muscular fibres described by Santesson as the longitudinal fibres of the constrictor urethrae.

Hyrtl endeavoured to show that the so-called constrictor was, in fact, more than a mere constrictor. The author agrees with him in considering the fibres which pass from the pelvis to the urethra as part of a very complicated muscular apparatus, destined to act upon the membranous portion of the urethra, not as a constrictor, but as an ejaculator seminis, as a compressor of Cowper's glands, and an assistant in the expulsion of urine. He believes that the circular muscular stratum of the urethra constitutes the true constrictor, and that the function of the longitudinal fibres just alluded to is in exact antagonism.

The only writer who has described the fibrous structures about the prostate as a *capsule* is Denonvilliers ("Propositions et Observations d'Anatomie, de Physiologie, et de Pathologie," Paris, 1837; article 3^e, "Anatomie du Perinée"). He finds fault with the ordinary mode of describing the fasciae, without regard to the parts to which they actually belong, and endeavours to

show that every muscle has its fascia, just like every great blood-vessel and every important organ in the body, as the larynx in the neck and prostate in the perineum. His words, where he treats of the latter organ, are as follows: "The prostate and membranous portion of the urethra are situated in the centre, included within the superior, inferior, and lateral fibrous planes, enveloped on every side, and sheathed like muscles. . . . We can conceive the membranous portion of the urethra to be contained in a species of irregularly-quadrilateral case."

Rétius had for several years been accustomed to teach a similar doctrine; but he attributes certain uses to the pelvic fasciae, which are not alluded to by Denonvilliers. We extract his description entire:

Ligamentum Pelvio-prostaticum Capsulare.—The thin membrane which covers the urinary bladder, which has commonly been described as a part of the pelvic fascia, and which passes outwards into the substance of the arcus tendineus of Santesson, stretches from the lower part of the bladder over the prostate. On reaching this organ, it becomes thick, and adheres firmly to the gland. The anterior part of the levator ani is in close apposition with this capsule, and no fascia intervenes between them. The capsule is thinnest at the posterior surface of the gland, passes down between it and the rectum, is prolonged beneath the prostate, covers the back part of the muscular apparatus of the urethra, as well as the included glands of Cowper, stretches sideways to the ascending rami of the ischium, to which it is attached; and between these attachments a thin layer passes down behind the bulb of the urethra, and terminates by a sharp reflection in the so-called triangular ligament. At the sides of the prostate, where the capsule is strongest, it stretches outwards, and is fixed to the neighbouring rami of the ischium and pubes. Thus the sides of the capsule are spread out like a tent, leaving the substance of the gland and covering the plexus venosus pudendales, with the accompanying arteries and nerves. Its attachments to the sides of the pelvic opening extend from the horizontal rami of the pubes almost to the tuberosities of the ischia. The anterior margins of these lateral attachments constitute the aponeurotic part of the pubo-prostatic or pubo-vesical ligaments; the posterior margins, which are stretched above the fasciculi of urethral muscles proceeding from the ischium, have a cord-like form thus given to them, resembling the corners of a square tent, and pass into the back part of the capsule, which has been already described. It is this posterior stretching of the capsule which Müller has figured so well, and termed ligamentum ischio-prostaticum, and which Santesson has followed further forwards, and prefers to term ligamentum pubo-ischiadicum prostatæ. Denonvilliers calls this side part "aponeurose latérale de la prostate, or pubo-rec-tale." Above, the wall of the capsule is only in contact with a small portion of the prostate, and as it descends from the bladder and prostate to the nearest surface of the os pubis, it is stretched by the muscular cords from the muscular coat of the bladder, constituting what have long been known as the pubic attachments of the detrusor urinae muscle. The tense cord-like borders thus formed are the so-called pubo-vesical ligaments which have already been alluded to. Between these the capsule forms a deep groove, and here also covers the venous plexus prostaticus impar, which lies above the urethra and prostate, and behind the symphysis pubis. The front wall of the capsule is formed by the triangular ligament of Colles.

Thus, then, both the prostate and muscular part of the urethra are contained in a capsule or *theba*, with four sides, and as many edges, with a broad basis of considerable extent, firmly attached to the outlet of the pelvis, and with a wide-spreading floor, formed of ligamentum triangulare. The two anterior corners of the basis (*Lig. pubo-ves*) lie close together; the two posterior (*Lig. ischio-prostatica*) are widely held apart. Not only does this apparatus form a strong ligament-like means of attachment for the prostate, urethra, venous plexuses, arteries and nerves, it contains, likewise, muscular structures of great importance for the urethra. The muscular apparatus has, as has been already explained, its outer attachment along the inner side of the long borders of the base of the capsule; a circumstance which has induced Santesson to regard the ligamenta ischio-prostatica, as the "tendines constrictores urethrae."

If we inquire how this important and curious structure has so long escaped the observation of anatomists, we find that the reason has been that the ordinary mode of describing fasciae has made us acquainted with parts, without throwing any light upon their anatomy as a whole. Thus the upper side of the capsule is called *lig. pubo-vesicalia*; its front or floor *lig. triangulare*; its lateral surfaces, folds of the pelvic fascia, passing between the levatores ani and prostate; while its back part has received the name of *fascia recto-vesicalis*.—*Monthly Journal of Medical Science*, March, 1850, from *Müller's Archiv.*, 1849, vii.

2. *On the Existence of two new kinds of Anatomical Elements in the Medullary Canals of Bones.* By M. CH. ROBIN.—In all bones, whether short, flat, or long, the medullary tissue contains, besides the adipose cells, the vessels, and the finely granular amorphous matter, a peculiar kind of cells, which may be termed *medullary cells*; these are spherical, or slightly polyhedric, transparent, with defined borders, and generally include a spherical, regular, transparent, sharply-defined nucleus. Between the nucleus and the cell-wall, and especially around the former, there exists a variable quantity of molecular granules. These cells are more abundant in young subjects than in adults, and towards the end of the period of gestation they occupy nearly the whole of the medullary cavity, to the exclusion of the adipose cells.

Another kind of cell is met with in long and short bones, but normally in less amount: the knowledge of these cells, however, is important, because it is in an unusual development of them that some diseases of bones originate. Certain tumours of bone, considered by pathologists as cancerous, are not truly so, but are made up of large plates or flattened lamellæ, sometimes polygonal, sometimes irregularly circular, having a diameter of at least from 1-20th to 1-12th of a millimetre (or from 2 to 3-1000ths of an inch), finely granular in their texture, and containing from six to ten large oval nuclei, which are embedded in the thickness of the plates. The author states that he has met with these bodies as the principal components of several osseous tumours; and that such tumours owe their origin to an unusual local development of a normal element of bone. For these peculiar bodies are found in the medullary tissue of even healthy bone; being much less numerous, however, than either the true medullary or the adipose cells; but being, like the preceding, more abundant in the bones of young subjects than in those of adults.—*British and Foreign Medico-Chirurgical Review*, April, 1850, from *Gazette Médicale de Paris*, December 22, 1849.

3. *Researches on the Physiology of the Medulla Oblongata.* By M. BROWN-SEQUARD.—The following are the results of the author's experimental inquiries, made upon fifty-four species of animals, belonging to the five classes of Vertebrata:—1. The life of Batrachia does not seem to be considerably shortened after the removal of the medulla oblongata alone, or with the rest of the encephalon, so long as the animals remain in air of a temperature below 46° (Fahr.). Many individuals have lived, in these conditions, more than three months. 2. The sanguiferous and lymphatic circulation, the cutaneous respiration, the digestion, the mucous, epidermic, and urinary secretions, the nutritive operations, the reflex power, and the properties of nerves and muscles, continue in Batrachia, deprived of the medulla oblongata, with as much rapidity and energy as in those which remain uninjured, and which are exposed to the same temperature. 3. All animals, even adult Mammalia, may survive the removal of the medulla oblongata during from ten to twenty minutes, when their temperature has been reduced below from 86° to 92°. For this result, pulmonary insufflation is not requisite. 4. The most remarkable differences present themselves in the duration of life, in the different individuals of the same species, after the removal of the medulla oblongata, these being in exact accordance with the temperature. Thus the duration of life in the Batrachia may be reckoned by *months*, between the temperatures of 32° and 46°; by *weeks*, between 41° and 54°; by *days*, between 50° and 61°; by *hours*, between 66° and 77°; and by *minutes*, between 86° and 104°.—*Gazette Médicale*, Dec. 22, 1849.

[These experiments, like those formerly made by Dr. W. F. Edwards, fully bear out the general principle, that when an animal has sustained a fatal lesion, the length of its survival is inversely as the rate at which it is living, and that this rate is directly as the temperature of its body. This temperature, in cold-blooded animals, is that of the surrounding medium; whilst in the warm-blooded, it is maintained at a nearly fixed standard by their independent calorifying power.]—*British and Foreign Medico-Chirurgical Review*, April, 1850.

4. On the Emission of Urine, as observed in an individual suffering from Ectopia of the Bladder. By Dr. PARMEGGIANI.—A man, at 30, having entered the hospital at Reggio with ectopia of the posterior wall of the bladder, so as to exhibit the orifices of the ureters very plainly, the opportunity was taken to make some observations upon the mode in which the urine entered the bladder. The statement of physiologists that it passes in, drop by drop, was not found to hold good. On the contrary, from time to time, it issued in true jets, sometimes fifteen seconds, sometimes thirty seconds, or even two or three minutes elapsing between these, the time varying according to that which had elapsed since fluids were taken into the stomach. The flow had no dependence upon the circulatory or respiratory movements. When emitted, the urine was fetid and alkaline; but in the act of flowing furnished an acid reaction—which is confirmatory of the statement of Stehberger, that the urine is secreted alkaline and becomes acid in the bladder.

Signs of the presence of iodide of potassium were found in one experiment six minutes, and in another twelve, after it had been swallowed; these increasing during twenty-four hours, and then diminishing until they disappeared.—*British and Foreign Medico-Chirurgical Review*, April, 1850, from *Omedei Annali* vol. cxxiv.

5. Experimental Researches on the Contractility of the Spleen.—The discovery of M. Kölliker, that the spleen contains a number of elongated cells, resembling those which are found in contractile tissues, and probably to be considered as a rudimentary condition of muscular fibre, has suggested experimental researches with a view to the determination whether or not the trabecular tissue of that organ can be excited to contraction by the electric stimulus. Such experiments have been performed by Professor WAGNER and M. Cl. BERNARD, with positive results; the form and dimensions of the spleen being considerably changed by the transmission of the electro-magnetic current through its substance.—*British and Foreign Medico-Chirurgical Review*, April, 1850, from *Gazette Médicale*, December 22, 1849.

6. On the Means of measuring degrees of Anæsthesia and Hyperæsthesia. By M. BROWN-SEQUARD.—The means proposed consist simply of an application to the pathological conditions in question, of Professor Weber's well-known method of measuring the relative discriminating power of different parts of the cutaneous surface, by the degree in which the two blunted points of a pair of compasses require to be separated from each other, in order that the double impression may be felt. Thus, in one case of complete anaesthesia of the lower extremities, the patient only felt a single impression on one leg, when the points of the compasses were 10, 15, or even 20 centimetres apart; whilst on the other leg he could distinguish them at a distance of 12 centimetres. The normal limit is generally from 3 to 5 centimetres. In another case of slighter anaesthesia, the limit of the discriminating power was at from 9 to 15 centimetres. And in another case of very slight anaesthesia, the limit was from 6 to 7 centimetres: in a case of hyperæsthesia, on the other hand, which accompanied paralysis of the motor power, the patient could perceive the distinctness of the two points on the foot, when they were separated to the distance of only 5 millimetres; the normal limit of discriminating power in that part being from 25 to 30 millimetres. The sensibility to pain, in this case, was as much exaggerated as the tactile sensibility.—*Brit. and For. Med.-Chirurg. Rev.*, April, 1850, from *Gaz. Méd. de Paris*, Feb. 2, 1850.